



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

mf

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/614,195

07/08/2003

Yuzo Hirayama

04329.3091

6325

22852 7590 03/08/2007
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

MOON, SEOKYUN

ART UNIT

PAPER NUMBER

2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

03/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/614,195	HIRAYAMA ET AL.	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The applicants' arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. **Claim 15** is objected to because of the following informalities: "... wherein the optical system comprises a lenticular in which lenses are arranged sheet corresponding to the arrayed sub regions". Examiner respectfully suggests the applicants to change the above claim limitation as "a lenticular sheet in which lenses are arranged..." to overcome the objection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US 2003/0016444, herein after "Brown") in view of Yuji et al. (JP Pub. 08-101367, herein after "Yuji").

As to **claim 1**, Brown [abstract lines 1-3 and lines 9-10] teaches a 3D image reproduction apparatus comprising:

a display ("*flat-screen color display*") [par. (0045) lines 1-3] including a screen ("*pixel array 11*") [fig. 1A] on which a plurality of pixels ("*pixels 112 and 113*") are arranged to display

synthesis (3D image to be displayed is formed by combining a plurality of lights emitted from a plurality of pixels, as shown in fig. 4) parallax (3D image to be displayed is formed by observing the image from two different points, i.e. left eye and right eye, as shown in fig. 2B) images in units of arrayed sub regions [par. (0015) lines 10-18] [fig. 2B], wherein each of the pixels includes three sub pixels that differ in color [fig. 2A-1] [par. (0020) lines 6-9 and par. (0066) lines 5-8], and parallax information is assigned to each of the sub pixels in units of horizontally arranged sub pixels (since 3D image to be displayed is formed by combining each of a plurality of lights from each of a plurality of sub pixels and the plurality of sub pixels included in a pixel are arranged in a horizontal direction, each of the plurality of sub pixels contains parallax information, as shown in fig. 4); and

an optical system ("*lenticular array 12*") arranged in front of the screen ("*pixel array 11*") of the display, forming a 3D image from synthesis parallax images displayed on the screen in units of arrayed sub regions [figs. 1A and 4].

Brown does not teach the sub pixels being laid out so that adjacent sub pixels differ in color.

However, Yuji [abstract] teaches a 3D image reproduction apparatus comprising a screen ("*liquid crystal cell 1*") on which a plurality of sub pixels are arranged [drawing 1], wherein adjacent sub pixels differ in color [drawing 2].

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the sub pixel arrangement of the apparatus of Brown with the sub pixel arrangement of Yuji, so that adjacent sub pixels differ in color, in order to provide an uniform color distribution for the image to be displayed, thus to prevent image degradation.

As to **claim 2**, Brown [fig. 1A] teaches the synthesis parallax images comprising images ray-traced (the apparatus of Brown displays a three-dimensional image by tracing light rays

backward from a viewing position to the light source, on a two-dimensional display surface) in units of the sub-pixels.

As to **claim 3**, Brown [fig. 4] teaches the synthesis parallax images comprising images synthesized from a plurality of parallax images in units of the sub pixels.

As to **claim 7**, Brown [fig. 1] teaches the optical system comprising a lenticular sheet ("*lenticular array 12*") in which lenses are arranged corresponding to the arrayed sub regions ("*2WP*").

As to **claims 4, 5, and 6**, Brown as modified by Yuji does not expressly teach the optical system to comprise one of a pinhole array, a slit array, or a micro-lens array.

However, as examiner acknowledges that specifying the type of the optical system as one of a pinhole array, a slit array, a micro-lens array, or a lenticular sheet is not a required design layout, but is one layout out of many alternative design layouts, it is an obvious matter of design choice to specify the type of the optical system as any one of a pinhole array, a slit array, a micro-lens array, or a lenticular sheet.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Brown as modified by Yuji to include any one of a pinhole array, a slit array, a micro-lens array, or a lenticular sheet, since any one of them would perform equally well at directing lights emitted from the screen to a viewer.

As to **claim 8**, Brown as modified by Yuji [figure 1 provided on page 5 of this Office Action, which is equivalent to Yuji's drawing 2] teaches sub pixels of the same color being laid out in a V-shaped pattern.

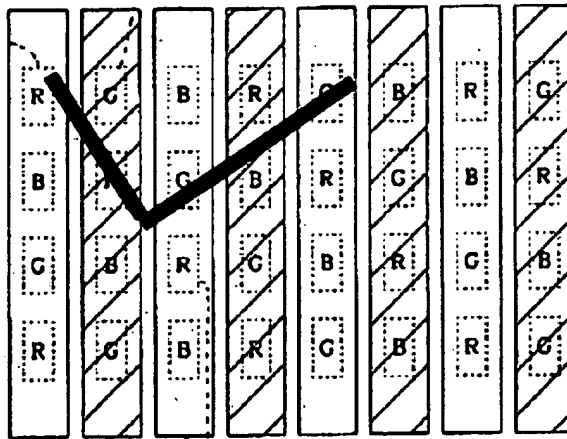


Figure 1

As to **claim 9**, all of the claim limitations have already been discussed with respect to the rejection of claim 1 except for the sub pixels having respectively rectangles and extending in a substantially vertical direction of the screen:

Brown teaches each of the sub pixels to have a rectangle and to extend in a substantially vertical direction of the screen [fig. 2A-1].

As to **claim 10**, all of the claim limitations have already been discussed with respect to the rejection of claim 2.

As to **claim 11**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

As to **claim 12**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 13**, all of the claim limitations have already been discussed with respect to the rejection of claim 5.

As to **claim 14**, all of the claim limitations have already been discussed with respect to the rejection of claim 6.

As to **claim 15**, all of the claim limitations have already been discussed with respect to the rejection of claim 7.

As to **claim 16**, all of the claim limitations have already been discussed with respect to the rejection of claim 8.

As to **claim 17**, Brown as modified by Yuji with the sub pixel arrangement of Yuji replacing the sub pixel arrangement of Brown teaches sub-pixels of the same color being laid out in a diagonal pattern [Yuji: drawing 2].

As to **claim 18**, all of the claim limitations have already been discussed with respect to the rejection of claim 17.

Conclusion

5. The applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 1, 2007

s.m.


SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER